FACT SHEET

U.S. Department of Energy
Grand Junction Office

Pinellas Environmental Restoration Project: Groundwater Remediation at the Building 100 Area at the Young-Rainey STAR Center, Largo, Florida

The U.S. Department of Energy (DOE) is conducting remediation of the contaminated groundwater at the Building 100 Area at the Young-Rainey Science, Technology, and Research (STAR) Center. Remediation is being conducted using groundwater recovery followed by air-stripping treatment of the recovered groundwater. This cleanup is being conducted as part of the Pinellas Environmental Restoration Project that is managed by the DOE Grand Junction Office.

Background

The Young-Rainey Science, Technology, and Research (STAR) Center is a former U.S. Department of Energy (DOE) facility located in Largo, Florida. Parts of the site are contaminated with organic solvents and metals used during the manufacture of neutron generators and other devices. In keeping with DOE's desire to contribute to economic development in the Tampa Bay region, DOE sold the facility to the Pinellas County Industrial Council on March 17, 1995. The sales contract includes clauses to ensure continued compliance with federal, state, and local regulations while DOE conducts remediation at the site.

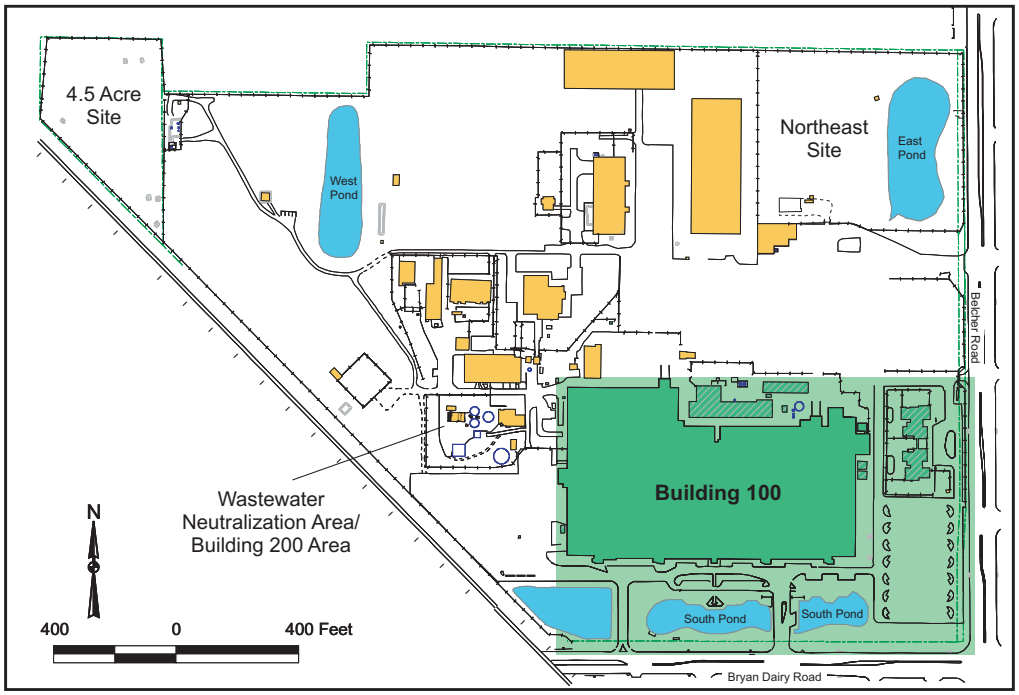

Figure 1. Location of Building 100 Area

In 1999, the Pinellas County Industrial Council was disestablished and ownership of the STAR Center changed to the Pinellas County government. The facility houses more than 20 businesses that range from administrative to light manufacturing. Building 100, the largest building at the STAR Center, covers approximately 11 acres (Figure 1). During the period of DOE ownership, the building was used for offices, laboratories, and production facilities.

As a result of historic waste disposal practices, contamination exists in the subsurface. The contaminated areas are designated as solid waste management units. Four units at the STAR Center have contamination in the surficial aquifer groundwater at levels in excess of protective standards and are undergoing remediation. The Building 100 Area is one of the solid waste management units that requires remediation.

Groundwater contamination at the Building 100 Area originated from historical leaks from underground drain lines located under the building and from leaks or spills at the former drum storage pad located near the northwest corner of the building. The drum storage pad was removed in 1983, and use of the underground drain lines was discontinued in 1989. The major groundwater contaminants, based on toxicity and concentration, are benzene, chloroethane, dichloroethane, dichloroethene, tetrachloroethene, trichloroethane, trichloroethene, and vinyl chloride.

Remediation Activities

In 1997, a groundwater extraction and treatment system was put into operation for the Building 100 Area. Contaminated groundwater is extracted through two recovery wells located at the northwest corner of the building. Because the contaminants in the groundwater are volatile, meaning that they tend

to leave the water and move into the air, the groundwater is piped to the air-stripper treatment system at the Northeast Site at the STAR Center. The groundwater is then pumped to the top of the air stripper tower (Figure 2) and allowed to flow down over the internal packing material (similar to plastic balls). At the same time, a blower at the tower base forces air up through the packing. The air flow volatilizes the contaminants from the groundwater and discharges them out the top of the tower. Subsequently, the contaminant vapors are rapidly degraded or broken down into harmless compounds by ultraviolet rays from the sun.

Analytical results of groundwater samples collected from monitor wells located southeast of Building 100 show that low levels of contamination exist in this area. Because this area is out of the zone of influence of the two recovery wells located at the northwest corner of the building, additional remediation must be conducted to clean up the groundwater in this area.

DOE is in the process of evaluating technologies to perform this task. Because the contaminant concentrations in this area are low, enhanced bioremediation is one of the technologies being considered. Bioremediation helps naturally occurring subsurface microorganisms break down organic compounds into harmless components, such as carbon dioxide and water. On the basis of observations of contaminant degradation products in the groundwater, biodegradation appears to be occurring naturally. Enhanced bioremediation may aid this natural biodegradation process. A pilot test to evaluate this technology is scheduled to begin in 2003.

Figure 2. Air stripper at the Northeast Site

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Additional information and fact sheets about the Pinellas Environmental Restoration Project at the Young-Rainey STAR Center are available on the Internet at **http://www.gjo.doe.gov/Pinellas/index.htm.**